

Trend Study 16B-21-99

Study site name: Huntington Canyon.

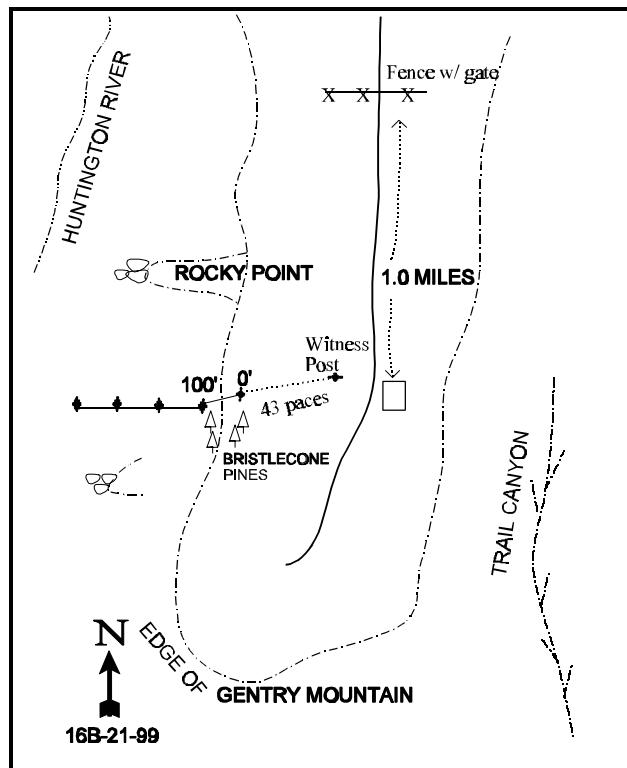
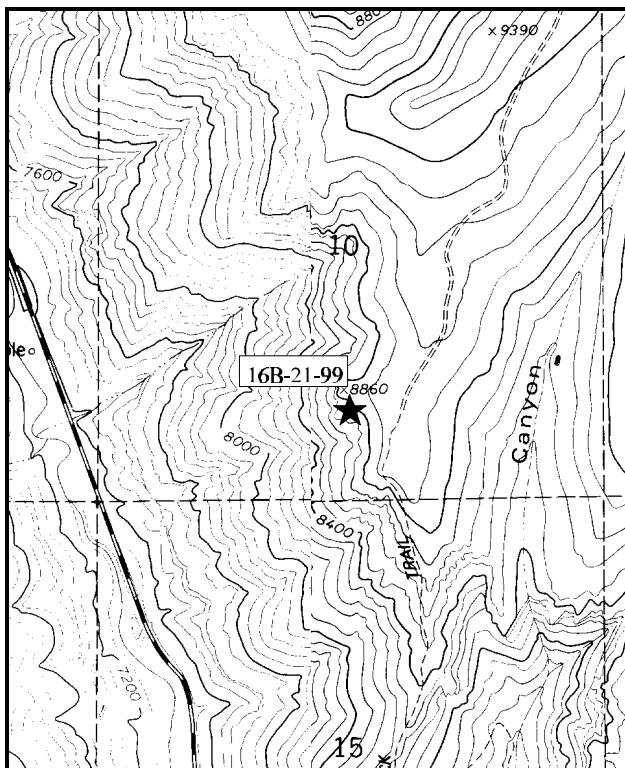
Range type: Perennial Grass.

Compass bearing: frequency baseline Line 1-235°M, Lines 2-4-248°M.

Footmark (first frame placement) 5 feet, foot marks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the ghost town of Mohrland, proceed past the coal loadout and up Cedar Creek. Go 4.5 miles to the top of Gentry Mountain and a three-way junction. Take the middle road (#252) and go 0.1 mile to a fence and cattleguard at the Forest Boundary. Continue 0.65 miles to a fork with a sign, and turn right toward McCadden Hollow. Go 0.7 miles to a cattleguard. Continue 2.1 miles on the main road, passing a few minor forks, to a gated fence. Continue down the road for one mile. There is a witness post on the right. Walk west from the road 43 paces to the edge by a patch of bristlecone pine. The 0' stake is just north of these trees.



Map Name: Hiawatha

Township 16S, Range 7E, Section 10

Diagrammatic Sketch

UTM 4365594.881 N, 489475.494 E

DISCUSSION

Trend Study No. 16B-21 (30-7)

The Huntington Canyon study samples a very steep Salina wildrye slope on the east side of Huntington Canyon. The windswept ridgetops and steep sidehills are important winter range for the elk on Gentry Mountain. Adjacent stands of curlleaf mountain mahogany show signs of elk use. Although the stands provide good thermal cover, much of the forage is unavailable because the mature trees are highlined. The land is managed by the Forest Service. Although 1,440 cows graze Gentry Mountain during the summer (June 27 to September 30), they very seldom use the steep side hills near the study site. Wildlife use is mostly by elk, with light deer use. Pellet group transect data in 1999 estimate 53 elk days use/acre (131 edu/ha), and 3 deer days use/acre (7 ddu/ha) on the site.

The slope on the study site is variable from 35% to over 50% in some places. It has a west-southwest aspect and an elevation of 8,800 feet. The soil is very rocky on the surface with rock and pavement fragments loose and easily dislodged downslope. The soil is moderately deep beneath the rock with an estimated effective rooting depth of 16 inches. Soil texture is a clay loam with a slightly alkaline pH (7.5). Both potassium (64 ppm) and phosphorus (2.8 ppm) are below the minimum levels that have been shown necessary for normal plant growth and development (70 ppm and 10 ppm respectively). The steep slope and rocky surface increases runoff, but armor the soil from severe erosion.

There is little browse directly on the study site. There were scattered young mahogany that showed evidence of heavy browsing in 1988. Currently, curlleaf mahogany number 80 plants/acre on the site. Mountain big sagebrush are also found on the site, but the density was moderately low at 820 plant/acre in 1999. It averages less than two feet tall, and shows only light to moderate hedging. This species appears to be stable with a mostly mature population and low recruitment. Biotic potential is currently zero. The most numerous shrubs are broom snakeweed and fringed sagebrush. Fringed sagebrush is expanding with a 25% increase in density, and a high biotic potential (18%) and recruitment level (24%) in 1999. If available, the fringed sagebrush can be nutritious, palatable winter forage. Moderate use was sampled on 20% of the population in 1999. Broom snakeweed is stable with 89% of the population being mature.

Salina wildrye dominates the plant community on the steep upper slopes with a quadrat frequency of over 80% in all sampling years. It currently provides 99% of the grass cover, 59% of the herbaceous cover, and 40% of the total vegetative cover at the site. There was some evidence of grazing in the past, but generally the large bunch grass is choked with old growth and a substantial build-up of litter. Other grasses and forbs are relatively uncommon, except for a large *Astragalus* that was called timber poisonvetch. This species currently provides 22% of the herbaceous cover and 15% of the total vegetative cover.

1994 TREND ASSESSMENT

Soil trend is currently stable with similar ground cover characteristics in 1994 compared to 1988. The well dispersed bunch grasses combined with the extensive rock and pavement cover adequately protect the soil. Useful browse is lacking on this site but those that do exist display stable trends. Sum of nested frequency for grasses increased while those of forbs declined. Nested frequency of Salina wildrye increased significantly. Combined nested frequencies of grasses and forbs remained about the same. Trend for herbaceous understory is currently stable.

TREND ASSESSMENT

soil - stable

browse - stable but lacking

herbaceous understory - stable, up for grasses and down for forbs

1999 TREND ASSESSMENT

Trend for soil is stable. Bare ground cover decreased in 1999, with vegetation cover increasing. Erosion continues to be held in check with abundant rock and pavement cover even with the extremely steep slope. Browse trend is stable. Mountain big sagebrush is the most abundant key species and increased in density in 1999, however, recruitment is low at the present time. Percent decadency increased from 7% to 20% in 1999, with 40% of the population displaying moderate use. Fringed sagebrush is the most abundant species in number, increasing to 2,300 plants/acre in 1999. This species can be a palatable browse source if not buried too deep under winter snows, but not critical for a site that is normally too high for deer and mostly utilized by elk. The herbaceous understory is stable with perennial sum of nested frequency increasing in 1999. Overall, Salina wildrye dominates, and diversity is lacking.

TREND ASSESSMENT

soil - stable

browse - stable

herbaceous understory - stable but lacking diversity

HERBACEOUS TRENDS --

Herd unit 16B, Study no: 21

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'94	'99	'88	'94	'99	'94	'99
G	Agropyron intermedium	-	3	-	-	1	-	.00	-
G	Elymus salina	222	252	237	85	84	83	12.20	12.80
G	Poa fendleriana	a-	b12	b17	-	4	7	.24	.11
G	Poa secunda	-	1	3	-	1	1	.00	.03
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		222	268	257	85	90	91	12.45	12.93
Total for Grasses		222	268	257	85	90	91	12.45	12.93
F	Agoseris spp.	7	-	-	3	-	-	-	-
F	Antennaria rosea	4	-	-	1	-	-	-	-
F	Arenaria spp.	8	6	-	4	3	-	.01	-
F	Astragalus convallarius	a-	b9	c97	-	5	41	.12	4.75
F	Astragalus coltoni	b82	a-	a-	37	-	-	-	-
F	Astragalus tenellus	12	27	9	7	11	4	1.16	.69
F	Chaenactis douglasii	11	2	12	5	1	7	.00	.06
F	Hymenoxys acaulis	b65	a19	a17	28	9	8	.05	.16
F	Hymenoxys richardsonii	a63	b97	ab91	32	48	46	1.93	1.85
F	Lesquerella spp.	-	-	1	-	-	1	-	.00
F	Lupinus spp.	-	-	-	-	-	-	.00	.06
F	Machaeranthera grindeloides	a14	ab19	b30	7	10	15	.17	.98
F	Penstemon spp.	-	1	1	-	1	1	.01	.00
F	Phlox spp.	-	-	4	-	-	2	-	.15
F	Unknown forb-perennial	1	-	-	1	-	-	-	-

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'94	'99	'88	'94	'99	'94	'99
	Total for Annual Forbs	0	0	0	0	0	0	0	0
	Total for Perennial Forbs	267	180	262	125	88	125	3.48	8.75
	Total for Forbs	267	180	262	125	88	125	3.48	8.75

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 16B, Study no: 21

T y p e	Species	Strip Frequency		Average Cover %	
		'94	'99	'94	'99
B	<i>Artemisia frigida</i>	41	44	.56	.94
B	<i>Artemisia tridentata vaseyana</i>	17	23	2.44	5.01
B	<i>Cercocarpus ledifolius</i>	6	2	.01	.15
B	<i>Chrysothamnus nauseosus glabratus</i>	34	20	.76	.77
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	0	4	-	.15
B	<i>Eriogonum corymbosum</i>	1	1	-	-
B	<i>Gutierrezia sarothrae</i>	57	38	1.14	.42
B	<i>Juniperus osteosperma</i>	0	0	.15	-
B	<i>Juniperus scopulorum</i>	-	-	-	.85
B	<i>Pinus flexilis</i>	-	-	.53	1.38
B	<i>Pinus edulis</i>	0	1	-	-
B	<i>Pinus longaeva</i>	0	0	-	-
B	<i>Pseudotsuga menziesii</i>	-	-	.15	-
B	<i>Symphoricarpos oreophilus</i>	3	2	.15	.45
	Total for Browse	159	135	5.91	10.15

CANOPY COVER --

Herd unit 16B, Study no: 21

Species	Percent Cover '99
<i>Cercocarpus ledifolius</i>	5
<i>Pinus flexilis</i>	2
<i>Pseudotsuga menziesii</i>	.60

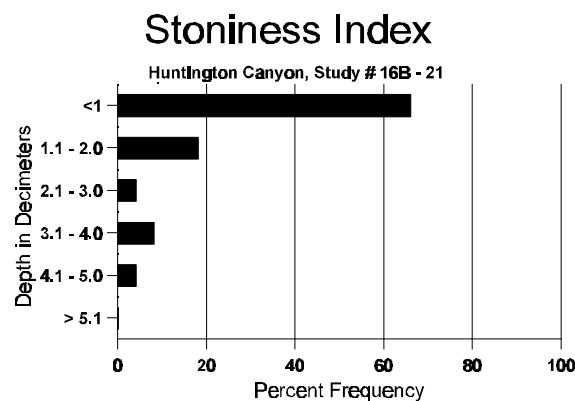
BASIC COVER --
Herd unit 16B, Study no: 21

Cover Type	Nested Frequency		Average Cover %		
	'94	'99	'88	'94	'99
Vegetation	294	306	13.25	20.46	34.86
Rock	346	274	21.75	30.95	18.72
Pavement	338	278	16.50	6.52	14.21
Litter	373	308	23.50	22.46	20.60
Cryptogams	17	8	0	.08	.04
Bare Ground	343	274	25.00	33.02	17.42

SOIL ANALYSIS DATA --

Herd Unit 16B, Study # 21, Study Name: Huntington Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
16.0	48.8 (16.7)	7.5	36.0	25.4	38.6	1.6	2.8	64.0	0.6



PELLET GROUP DATA --
Herd unit 16B, Study no: 21

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha) '99
	'94	'99	
Rabbit	7	7	n/a
Elk	29	24	53 (131)
Deer	4	3	3 (7)

BROWSE CHARACTERISTICS --

Herd unit 16B, Study no: 21

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
<i>Artemisia frigida</i>																	
S	88	5	-	-	-	-	-	-	-	-	5	-	-	-	166		5
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	21	-	-	-	-	-	-	-	-	21	-	-	-	420		21
Y	88	20	-	-	-	-	-	-	-	-	20	-	-	-	666		20
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	99	23	5	-	-	-	-	-	-	-	28	-	-	-	560		28
M	88	13	2	-	-	-	-	-	-	-	15	-	-	-	500	4	15
	94	73	11	-	-	-	-	-	-	-	73	-	11	-	1680	6	84
	99	68	18	-	1	-	-	-	-	-	87	-	-	-	1740	8	87
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
	'88	06%			00%			00%			+32%						
	'94	13%			00%			14%			+25%						
	'99	20%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)										'88	1166	Dec:		0%			
										'94	1720			1%			
										'99	2300			0%			
<i>Artemisia tridentata vaseyana</i>																	
S	88	2	-	-	-	-	-	-	-	2	-	-	-	66		2	
	94	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	88	5	-	-	-	-	-	-	-	5	-	-	-	166		5	
	94	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	2	-	-	-	-	-	-	2	-	-	-	40		2	
M	88	8	-	-	-	-	-	-	-	8	-	-	-	266	19	28	
	94	26	-	-	-	-	-	-	-	26	-	-	-	520	10	22	
	99	16	13	2	-	-	-	-	-	31	-	-	-	620	18	31	
D	88	1	-	-	-	-	-	-	-	1	-	-	-	33		1	
	94	2	-	-	-	-	-	-	-	2	-	-	-	40		2	
	99	6	2	-	-	-	-	-	-	7	-	-	1	160		8	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	99	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
	'88	00%			00%			00%			+17%						
	'94	00%			00%			00%			+32%						
	'99	41%			05%			02%									
Total Plants/Acre (excluding Dead & Seedlings)										'88	465	Dec:		7%			
										'94	560			7%			
										'99	820			20%			

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Cercocarpus ledifolius</i>																		
S	88	1	-	1	-	-	-	-	-	-	2	-	-	-	66		2	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1	
Y	88	1	4	8	-	-	-	-	-	-	13	-	-	-	433		13	
	94	3	-	-	1	-	-	-	-	-	4	-	-	-	80		4	
	99	-	-	3	-	-	-	-	-	-	3	-	-	-	60		3	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80	33 24	4	
	99	-	-	-	-	-	-	-	-	1	1	-	-	-	20	149 121	1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>						
		'88	31%		62%			00%										
		'94	00%		00%			00%										
		'99	00%		75%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	433	Dec:	-			
												'94	160		-			
												'99	80		-			
<i>Chrysothamnus nauseosus glabratus</i>																		
Y	88	3	-	-	-	-	-	-	-	-	3	-	-	-	100		3	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	88	20	6	-	-	-	-	-	-	-	26	-	-	-	866	11 13	26	
	94	59	-	-	-	-	-	-	-	-	59	-	-	-	1180	41 34	59	
	99	25	-	-	-	-	-	-	-	-	25	-	-	-	500	17 20	25	
D	88	6	-	-	-	-	-	-	-	-	6	-	-	-	200		6	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>						
		'88	17%		00%			00%										
		'94	00%		00%			00%										
		'99	00%		00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	1166	Dec:	17%			
												'94	1180		0%			
												'99	580		7%			
<i>Chrysothamnus viscidiflorus viscidiflorus</i>																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	2	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6 16	0	
	99	6	-	-	-	-	-	-	-	-	6	-	-	-	120	14 18	6	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>						
		'88	00%		00%			00%										
		'94	00%		00%			00%										
		'99	25%		00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'94	0		-			
												'99	160		-			

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Eriogonum corymbosum																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	94	-	1	-	-	-	-	-	-	-	1	-	-	-	20	3	14	
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	15	
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
			'88	00%		'94	100%		'99	00%						+50%		
Total Plants/Acre (excluding Dead & Seedlings)																		
															'88	0	Dec:	
															'94	20		
															'99	40		
Gutierrezia sarothrae																		
S	88	21	-	-	-	-	-	-	-	-	21	-	-	-	700		21	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
Y	88	70	-	-	-	-	-	-	-	-	70	-	-	-	2333		70	
	94	16	-	-	-	-	-	-	-	-	16	-	-	-	320		16	
	99	6	2	-	-	-	-	-	-	-	8	-	-	-	160		8	
M	88	37	4	1	-	-	-	-	-	-	42	-	-	-	1400	8	42	
	94	130	-	-	-	-	-	-	-	-	130	-	-	-	2600	6	130	
	99	81	5	-	-	-	-	-	-	-	86	-	-	-	1720	8	86	
D	88	3	1	-	-	-	-	-	-	-	3	-	1	-	133		4	
	94	11	-	-	-	-	-	-	-	-	4	-	-	7	220		11	
	99	4	-	-	-	-	-	-	-	-	3	-	-	1	80		4	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	100		5	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
			'88	04%		'94	.86%		'99	.86%						-19%		
				00%			00%			01%						-38%		
Total Plants/Acre (excluding Dead & Seedlings)																		
															'88	3866	Dec:	
															'94	3140		
															'99	1960		
Juniperus osteosperma																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
			'88	00%		'94	00%		'99	00%								
				00%			00%			00%								
Total Plants/Acre (excluding Dead & Seedlings)																		
															'88	33	Dec:	
															'94	0		
															'99	0		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Pinus edulis																	
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'88																
	'88																
	'94																
	'99																
Total Plants/Acre (excluding Dead & Seedlings)																	
															'88	0	Dec:
															'94	0	-
															'99	20	-
Pinus longaeva																	
S	88	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'88																
	'88																
	'94																
	'99																
Total Plants/Acre (excluding Dead & Seedlings)																	
															'88	0	Dec:
															'94	0	-
															'99	0	-
Syphoricarpos oreophilus																	
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	16	48
	99	1	1	-	-	-	-	-	-	-	2	-	-	-	40	19	54
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>					
	'88																
	'88																
	'94																
	'99																
Total Plants/Acre (excluding Dead & Seedlings)																	
															'88	0	Dec:
															'94	80	-
															'99	40	-